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Re: In Re Patent Application For: Vinjamoori, Dutt V. et al.
Filed: December 21, 2001
Serial No. 09/670,085
Group Art Unit: 2851
Examiner: Rodney Evan Fuller
For: METHOD AND APPARATUS FOR DETERMINING OIL IN A SAMPLE
Our Ref. No. 49202-00022USPT

Dear Sir:

Transmitted for filing with the U.S. Patent and Trademark Office are the following documents for the above-referenced patent application:

1. Appeal Brief Pursuant to 37 C.F.R. §§ 1.191 and 1.192 with Appendix A (filed in triplicate);
2. Check in the amount of $330.00 to cover filing an Brief Appeal Brief Pursuant to 37 C.F.R. §§ 1.191 and 1.192; and
3. Acknowledgment Postcard.

Please address all communications related to this to:

Andre M. Szuwalski
Jenkens & Gilchrist
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In the event there is an under or over payment of any required fee, please debit or credit our Deposit Account #10-0447. This letter is being filed in duplicate to facilitate processing.

If any extension of time for the filing of the attached is required, please consider this to be a petition for said extension and any fee necessary may be charged to the aforementioned deposit account.

With best regards,

JENKENS & GILCHRIST
A Professional Corporation

Date: March 23, 2004

André M. Szuwalski

AMS:meo
Enclosure(s)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Vinjamoori, Dutt V. et al.	§
Serial No.:	09/670,085	§ Art Unit: 2851
Filed:	December 21, 2001	§
Title:	METHOD AND APPARATUS FOR DETERMINING OIL IN A SAMPLE	§ Examiner: Rodney Evan Fuller

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Type or Print Name: Marcy Overstreet

Signature: Marcy Overstreet

APPEAL BRIEF PURSUANT TO 37 C.F.R. §§1.191 AND 1.192

This appeal brief is filed pursuant to the Applicant's appeal from decision of the Patent Office to the Board of Patent Appeals and Interferences filed January 23, 2004.

1. REAL PARTY IN INTEREST

The real party in interest is Monsanto Company having a place of business at 800 N. Lindbergh Blvd., 02G, St. Louis, Missouri 63167.

2. RELATED APPEALS AND INTERFERENCES

Applicant knows of no other appeals or interferences which will directly affect or be directly affected by or which have a bearing on the Board's decision in the pending appeal.

3. STATUS OF CLAIMS

Claims 1-81 are pending. All of the pending claims are the claims subject to this appeal. A copy of the pending claims are attached as Appendix A. Pending claims 1-7 and 10-81 stand rejected under 35 U.S.C. §102 (b), as being anticipated by Bergqvist M. et al., "Characterization of Honeysuckle (*Lonicera caprifolium* L.) Seed Oil Triacylglycerols by High Performance Liquid Chromatography and Light Scattering Detection," Phytochemical Analysis, vol. 3. 1992,

pp. 215-217 (hereinafter "*Bergqvist*"). Claims 8 and 9 stand rejected under 35 U.S.C. § 103(a) as obvious over *Bergqvist*.

4. STATUS OF AMENDMENTS

In response to the Final Office Action mailed on September 18, 2003, Applicants responded by submitting a Response arguing that the claims are patentable. No claims were amended in that Response. Thus, all presented amendments have been entered and claims 1-81 are pending.

5. SUMMARY OF THE INVENTION

The invention is generally directed to methods for determining oil content of a sample, i.e., the **total amount of oil** present in the sample. *Application, p. 3, ll. 18-19*; *Application, p. 6, ll. 24-27*. The methods of the invention comprise the steps of extracting oil from a seed or sample using a solvent, evaporating the solvent in a stream of gas to form oil particles, directing light into the stream of gas and the oil particles thereby forming reflected light, detecting the reflected light, and, determining the oil content based on the reflected light. *Application, p. 3, ll. 19-22*. Applicants' invention permits the determination of the total amount of oil in a sample by measurement of the intensity of reflected light as an indicator of the total amount of oil present in the sample.

6. ISSUES

I. Whether Examiner has properly construed the claims, specifically the term "oil content"?

II. Whether Applicants' invention as claimed in pending claims 1-7 and 10-81 is anticipated under 35 U.S.C. § 102(b) by *Bergqvist*?

III. Whether Applicants' invention as claimed in pending claims 8-9 is obvious under 35 U.S.C. § 103(a) over *Bergqvist*?

7. GROUPING OF CLAIMS

Group 1: Applicant groups claims 1-7, 10-34 and 44 such that they stand or fall together on the issue of anticipation under §102 over *Bergqvist*.

Group 2: Applicant groups claims 35-43 such that they stand or fall together on the issue of anticipation under 35 U.S.C. § 102 based on *Bergqvist*.

Group 3: Applicant groups claim 45 to stand or fall alone on the issue of anticipation under 35 U.S.C. § 102 based on *Bergqvist*.

Group 4: Applicant groups claims 46-81 such that they stand or fall together on the issue of anticipation under 35 U.S.C. § 102 based on *Bergqvist*.

Group 5: Applicant groups claims 8-9 such that they stand or fall together on the issue of obviousness under 35 U.S.C. § 103 over *Bergqvist*.

8. ARGUMENT

A. Introduction

As noted above with respect to the summary of this invention, the invention is directed to and claims a method and device for determining the oil content of a sample. One of the specific advantages of Applicants' invention is the ability to determine the **total amount of oil** in a sample by measurement of the intensity of reflected light as an indicator of the total amount of oil present in the sample, without requiring prior fractionation of the oil into its individual components. Applicants believe that the Examiner has improperly construed the claims, specifically the term "oil content", and thereby incorrectly concluded that *Bergqvist* anticipates the claimed invention 35 U.S.C. § 102(b). As discussed in detail below, the *Bergqvist* reference is inapposite to the claimed invention, which is neither anticipated by nor obvious in view of the teachings of the prior art.

B. Claim Construction

1. Applicable Law

"Analysis begins with a key legal question—what is the invention *claimed*?" *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567 (Fed. Cir. 1987) (emphasis present). In answering the question, "the Board must give claims their broadest **reasonable** construction. ..." *In re Hyatt*, 211 F.3d 1367, 1372 (Fed. Cir. 2000) (emphasis added). "Moreover, limitations are

not to be read into the claims from the specification." *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993) (*citing In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989)).

Claim language defines claim scope. *SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (*en banc*). As a general rule, claim language is given the ordinary meaning of the words in the normal usage of the field of the invention. *Toro Co. v. White Consol. Indus.*, 199 F.3d 1295, 1299 (Fed. Cir. 1999). Additionally, the inventor may act as his own lexicographer and use the specification to supply the meanings for terms either explicitly or by implication. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (*en banc*), aff'd, 517 U.S. 370 (1996). Thus, to help determine the proper construction of a patent claim, a construing court consults the written description, and, if in evidence, the prosecution history. *Id.* at 979-80.

2. Construction of "Oil Content"

Applicants claim various methods which include the determination of oil content based on an amount of detected light reflected from oil particles. Applicants have defined the term "oil content" in the specification to mean "the amount of oil present in a sample". *Application, p. 6, ll. 24.* Furthermore, during prosecution, Applicants have consistently restated this definition of "oil content" to refer to the total amount of oil in a sample. *See* Applicants' Response to First Office Action (mailed June 18, 2003) at p. 16. Inasmuch as Applicants may act as their own lexicographers, Applicants have defined the term "oil content" in the specification and reiterated this definition during prosecution. Therefore, the Examiner is obligated to use the definition provided by Applicants for the term "oil content".

However, despite Applicants' efforts, it is clear that the Examiner has misconstrued the claim term "oil content" as meaning oil **presence** when the specification clearly indicates that the term should instead be understood to mean and refer to the **amount** of oil which is present. For example in the Advisory Action mailed on December 24, 2003, the Examiner notes:

> Bergqvist discloses an apparatus/ method for "extracting oil from a seed using a solvent (column 2, 3rd paragraph, line 6); evaporating said solvent (column 2, 3rd paragraph, line 9) in a stream of gas to form oil particles; directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles, detecting said reflecting light and

> determining said oil content based on said reflected light (column 3, 2nd paragraph, lines 12-13)." Further Table 2 and Figure 1 shows the data collected from the liquid chromatograph and clearly shows the **composition or "oil content"** of the sample. (emphasis added)

It is clear from the Examiner's statements that the term "composition" is being used as a synonym for the term "oil content". Inasmuch as the term "composition" of a sample plainly refers to its "make up" rather than its quantity or amount, the Examiner has misconstrued the term "oil content". Additionally, Applicants have defined the term "oil content" to mean "the amount of oil present in a sample". As such, the term "oil content" is intended to refer to the "quantity" i.e., amount of oil, rather than the quality i.e., composition.

Secondly, it appears that the Examiner is equating the term "oil" to mean "triglyceride (TG)."[1] This is an incorrect analogy because there is a clear distinction between the determination of total TGs and total oil content. One of ordinary skill in the art would readily recognize that **"oil" refers to more than just total triglycerides** and includes components such as free sterols, sterol esters, free fatty acids, mono and di-glycerides, tocopherols and some phospholipids. *See also, Application, p. 7, ll. 1-2.* The determination of total oil content in accordance with the present invention takes into account all of these components.

The Examiner has not properly construed the claims in a manner commensurate with the claim language used or in a manner consistent with Applicants' specification. Instead, the Examiner has impermissibly read in a limitation into the claims from the specification i.e., equating triglyceride with oil, when no such limitation exists in the claim language itself. Additionally, Applicants have not made such an equation either in the specification or during prosecution, but rather have merely stated that TGs are a marker for oil content. In sum, given a

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1 Although this statement does not appear in any of the written papers filed by the Examiner, in a telephonic interview on March 9, 2004 with Applicant Dr. Dutt V. Vinjamoori and Applicant's attorney Lekha Gopalakrishnan, Examiner referred to the Specification at p.6, ll. 16-17, wherein Applicants state that "triglycerides are used as a marker for the total oil content." It is apparently the Examiner's position that a determination of TG content is the same as a determination of total oil content. For the reasons discussed herein, this position is incorrect.

proper construction of the claim language and a correct interpretation of the *Berqvist* reference (which is discussed further below), the prior art clearly fails to teach or suggest any process or apparatus for determining amounts of oil using a light scattering process.

C. Rejections Under 35 U.S.C. §102

1. Applicable Law

"[H]aving ascertained exactly what subject matter is being claimed, the next inquiry must be into whether such subject matter is novel." *In re Wilder*, 429 F.2d 447, 450 (CCPA 1970). "[A]nticipation is a question of fact." *Hyatt*, 211 F.3d at 1371 (*citing Bischoff v. Wethered*, 76 U.S. (9 Wall.) 812, 814-15 (1869); *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997). "A claim is anticipated **only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference**." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987) (emphasis added); *see also* MPEP § 2131.02. "The **identical** invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989) (emphasis added).

2. Rejection of the Claims in Group 1 as being anticipated by *Bergqvist*

The Examiner has finally rejected pending claims 1-7, 10-34 and 44[2] under 35 U.S.C. § 102(b) as being anticipated by *Bergqvist*. Independent claim 1 reads as follows:

> A method for determining oil content of a seed comprising the steps of:
> extracting oil from a seed using a solvent;
> evaporating said solvent in a stream of gas to form oil particles;
> directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;
> detecting said reflected light; and,
> determining said oil content based on said reflected light.

2 In addition to claim 1, claims 24, 27, 30, 31, 32 and 44 are also independent claims. Claim 1 is selected as the representative independent claim in Group 1 for the purposes of the discussion.

For the following reasons, the Applicants respectfully disagree that *Bergqvist* anticipates claims 1-7, 10-34 and 44.

As discussed above, in order to anticipate a claim, the cited reference must set forth each and every element of the claim, either expressly or inherently. *See Verdegaal Bros.*, 814 F.2d at 631.

Bergqvist recites a method to isolate triacylglycerols from seeds and to characterize the pattern of molecular species of the triacylglycerols. *Bergqvist* at p. 215, Abstract. The authors note that "[t]he method described herein represents a convenient route for the determination of molecular species in [triglycerides] ...." *Bergqvist* at p. 217, col. 2, ¶ 2. The method of *Bergqvist* is made up of the following steps:

1. Dry seeds are mixed in an extraction solvent and ground with glass beads to obtain total lipid extract. *Bergqvist* at p. 215, col. 2, ¶ 3;

2. The total lipid extract (which is evaporated under a stream of nitrogen to recover the oil) is subjected to preparative thin layer chromatography (TLC) to recover total triglycerides (TGs) from the total lipid extract. *Bergqvist* at p. 215, col. 2, ¶ 4. In this step, the TGs are isolated from the remainder of the lipid/oil components present in the total lipid extract;

3. The recovered TGs are redissolved in a second solvent (which is different from the extraction solvent used in Step 1). *Bergqvist* at p. 215, col. 2, ¶ 4;

4. The recovered and redissolved TGs are subjected to preparative liquid chromatography (LC) in order to fractionate the TGs into the individual molecular species contained in the recovered TGs. *Bergqvist* at p. 215, col. 2, ¶ 5;

5. The total TGs and the fractions containing the individual molecular species are subjected to high performance liquid chromatography (HPLC) to determine the composition (%) of the individual molecular species and subjected to light scattering detection. *Bergqvist* at p. 216, Table 2 and Fig. 1; and

6. The collected fractions obtained from the preparative LC experiment are dried under a stream of nitrogen and derivatized into methyl esters in order to determine the fatty acid compositions representing the individual molecular species. *Bergqvist* at p. 216, col. 3, ¶ 3 and Table 1.

The following paragraph sets forth the reasons stated by the Patent Office for the final rejection of the claims:[3]

> Bergqvist discloses an apparatus/ method for "extracting oil from a seed using a solvent (column 2, 3rd paragraph, line 6); evaporating said solvent (column 2, 3rd paragraph, line 9) in a stream of gas to form oil particles; directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles, detecting said reflecting light and determining said oil content based on said reflected light (column 3, 2nd paragraph, lines 12-13)." Further Table 2 and Figure 1 shows the data collected from the liquid chromatograph and clearly shows the composition or "oil content' of the sample.

Contrary to the conclusions drawn by the Examiner, *Bergqvist* does not recite all of the elements of the claimed invention. Claim 1 recites a method comprising the following **five** steps: extracting oil from a seed using a solvent (element 1), evaporating said solvent in a stream of gas to form oil particles (element 2), directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles (element 3), detecting said reflected light (element 4) and, determining said oil content based on said reflected light (element 5). *Bergqvist* fails to expressly or inherently teach element 3 of claim 1, which recites "directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles". The "stream of gas" referred to element 3 of claim 1 is the same "stream" that is used to evaporate the solvent containing the extracted oil (Claim 1, elements 2 and 1 respectively). In other words, the series of steps set forth in claim 1 is continuous **and** sequential. Furthermore, it should be noted that the "stream of gas" referred to in element 3 of claim 1, which is analogous to the "stream of nitrogen" used in *Bergqvist* to evaporate the total lipid extract, *see Bergqvist*, col. 2, ¶ 3, line 9, is never subjected to any type of directed light. Rather, in *Bergqvist* a solvent/TG mixture, as opposed to a solvent/oil mixture (claim 1) is exposed to light detection.

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3 Advisory action dated December 24, 2003 at p. 2.

A close examination of the Examiner's citation to *Bergqvist* at **column 3, 2nd paragraph, lines 12-13** (which according to the Examiner recites elements 3, 4 and 5 of claim 1) shows that light scattering detection process in *Bergqvist* is performed against individual ones of the fractionated molecular species of TGs. In other words, the TGs are first fractionated into individual molecular species (for example, 14:0, 16:0, 17:0, etc., as shown in Table 1) as well as make mass detections, following which the light scattering HPLC process is performed on each individual molecular species to confirm the purity of the mass detection HPLC results. Thus, it is clear that the light scattering HPLC process in *Bergqvist* is not being used to make an oil content measurement. Rather, it is solely taught for use in making separate individual TG species evaluation (and even more specifically to confirm the results obtained using mass detection HPLC). *Bergqvist's* process, if employed as set forth in the reference, will only produce a total TG determination and **can never** provide the total oil content of a sample using scattered and detected light, for the simple reason that by the time the *Bergqvist* process arrives at the light detection step, the only component being measured is the individual molecular species of TGs (see Step 2 of *Bergqvist* discussed above, where the TGs are isolated from the remainder of the lipid/oil components present in the total lipid extract).

It is further noted that the total lipid extract of the *Bergqvist* process is not detected using light scattering HPLC. Rather, light scattering HPLC in *Bergqvist* is reserved solely for TG species processing. In the claimed invention, the solvent which extracts the oil from the seed is the same solvent which is subjected to evaporation in a stream of gas, and it is the oil which is recovered from **that same solvent** evaporation which is detected by light scattering. *Bergqvist's* use of light scattering HPLC on a solvent containing a specific TG species accordingly does not anticipate the claimed use of light scattering detection on an evaporated solvent which contains the seed extracted oil. In fact, *Bergqvist's* teaching to perform molecular species fractionation of

an oil containing sample before engaging in light scattering HPLC clearly **teaches away** from the claimed invention.

Thus, the light scattering HPLC process in *Bergqvist* does not anticipate the claimed invention for determining oil content of the seed based on scattered and detected light, and Bergqvist does not recite each and every element of the claimed invention as set forth in claims 1-7, 10-34 and 44.

3. Rejection of the Claims in Group 2 as being anticipated by *Bergqvist*

The Examiner has finally rejected pending claims 35-43 under 35 U.S.C. § 102(b) as being anticipated by *Bergqvist*. Independent claim 35 reads as follows:

> A method of introgressing a trait into a plant comprising the steps of:
> extracting oil from a seed using a solvent;
> evaporating said solvent in a stream of gas to form oil particles;
> directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;
> detecting said reflected light;
> determining said oil content based on said reflected light;
> selecting a seed with a similar genetic background to said seed based on said determined oil content;
> growing a fertile plant from said selected seed; and,
> utilizing said fertile plant as either a female parent or a male parent in a cross with a second plant.

Applicants respectfully disagree that *Bergqvist* anticipates claims 35-43. Claim 35 which recites a method of introgressing a trait into a plant, incorporates all of the limitations of independent claim 1 discussed above. In addition, claim 35 recites an additional 3 steps of selecting a seed with a similar genetic background to the seed whose oil content has been determined, growing a plant from the selected seed and utilizing the fertilized plant as either a female parent or a male parent in a cross with a second plant. *Bergqvist* neither teaches nor suggests the additional 3 steps recited in claim 35.

Thus, for the same reasons discussed above with respect to the rejection of claims 1-34 and 44, combined with the absence in *Bergqvist* of the teaching or suggestion of the additional 3 claim elements present in claim 35, Applicants respectfully request that the rejection of claims 35-43 under 35 U.S.C. § 102(b) based on *Bergqvist* be withdrawn.

4. Rejection of the Claim in Group 3 as being anticipated by *Bergqvist*

The Examiner has finally rejected pending claim 45 under 35 U.S.C. § 102(b) as being anticipated by *Bergqvist*. Independent claim 45 reads as follows:

> A method for selecting a seed having an enhanced oil content, comprising the steps of:
> a) extracting oil from a seed using a solvent;
> b) evaporating said solvent in a stream of gas to form oil particles;
> c) directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;
> d) detecting said reflected light;
> e) determining said oil content based on said reflected light;
> f) repeating steps a) through e) one or more times, and,
> g) selecting one or more seeds based on said oil content.

Applicants respectfully disagree that *Bergqvist* anticipates claim 45. Claim 45 which recites a method for selecting a seed having an enhanced oil content, incorporates all of the limitations of independent claim 1 discussed above. In addition, claim 45 recites an additional 2 elements of repeating the preceding five steps (a-e) one or more times and selecting one or more seeds based on oil content. *Bergqvist* neither teaches nor suggests that the process steps can be repeated nor does it teach the step of selecting one or more seeds based on oil content.

Thus, for the same reasons discussed above with respect to the rejection of claims 1-34 and 44 and 35-43, combined with the absence in *Bergqvist* of the teaching or suggestion of the additional 2 claim elements present in claim 45, Applicants respectfully request that the rejection of claim 45 under 35 U.S.C. § 102(b) based on *Bergqvist* be withdrawn.

5. Rejection of the Claims in Group 4 as being anticipated by *Bergqvist*

The Examiner has finally rejected pending claims 46-81[4] under 35 U.S.C. § 102(b) as being anticipated by *Bergqvist*. Independent claim 46 reads as follows:

> A device, comprising:
> a nebulizer that mixes a stream of gas with a mixture comprising a solvent and oil to create a dispersed spray;
> a drift tube that receives the dispersed spray and within which the solvent evaporates leaving dispersed particles of the oil flowing in the stream of gas;
> a source of emitted light that is directed into the drift tube and reflects off the flowing dispersed particles of oil;
> a light detector operable to produce an output signal proportional to the amount of light reflected off the flowing dispersed particles of oil; and
> a signal processing functionality which determines an amount of oil present within the mixture from the output signal.

4 In addition to claim 46, claims 58 and 70 are also independent claims. Claim 46 is selected as the representative independent claim in Group 4 for the purposes of the discussion.

Applicants respectfully disagree that *Bergqvist* anticipates claims 46-81. Claim 46 recites a device comprising a nebulizer that mixes a stream of gas with **a mixture comprising a solvent and oil** (total oil) to create a dispersed spray. As discussed above, *Bergqvist* teaches the application of light scattering and detection only to a solvent/ TGs species mixture. Accordingly, *Bergqvist* does not anticipate the "claimed oil/solvent mixture" in claim 46. Applicants further submit that *Bergqvist's* solvent/TG species teaching does not suggest the claimed "solvent/oil mixture" limitation because the TG fractionation steps employed by *Bergqvist* clearly teach away from performing an oil based light scattering HPLC operation. Still further, Applicant again submits that the TG species process taught by *Bergqvist* fails to teach or suggest the claimed "determining of oil content" limitation. Claim 46 is accordingly distinguished from *Bergqvist*.

D. Rejections Under 35 U.S.C. §103

1. Applicable Law

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *See* M.P.E.P. § 2143.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000).

2. Rejection of the Claims in Group 5 as obvious over *Bergqvist*

The Examiner has finally rejected pending claims 8 and 9 under 35 U.S.C. § 103 as obvious over *Bergqvist*. Claims 8 and 9 comprise all of the claim limitations of claim 1 (discussed above) and in addition recite the limitations "wherein 0.5 to 50 mL of said solvent is

used" and "wherein 1 to 3 mL of said solvent is used". Applicants respectfully disagree that claims 8 and 9 are obvious over *Bergqvist*. Firstly, as discussed above, *Bergqvist* does not teach or suggest all of the limitations in claims 8 and 9. Secondly, the Examiner has failed to demonstrate why one of ordinary skill in the art would modify the quantity of solvent (45 mL) taught by *Bergqvist*. In the absence of the requisite teaching or suggestion to alter the amount of solvent taught by the prior art, one of ordinary skill in the art would not be motivated to make such a change. Thirdly, on the basis of the teachings of the prior art, there can be no reasonable expectation of success. *Bergqvist* teaches grinding of a mass of seeds in large amounts of solvent to extract the total lipids. Nothing in the prior art cited by the Examiner would suggest a reasonable expectation of success upon modification of the quantity of solvent.

9. CONCLUSION

For the reasons set forth above, the appealed Claims 1-81 (Groups 1-5) are neither anticipated under 35 U.S.C. §102 nor rendered obvious under 35 U.S.C. § 103(a) by *Bergqvist*. Accordingly, the final rejection of these claims should be reversed.

The fee of $330 required by 37 C.F.R. § 1.17(c) is enclosed herewith. The Commissioner is hereby authorized to charge Deposit Account No. 10-0447, reference 49202-00022 for any additional fees inadvertently omitted which may be necessary now or during the pendency of this application, except for the issue fee.

In accordance with 37 C.F.R. § 1.192(a), this brief is submitted in triplicate.

Respectfully submitted,

JENKENS & GILCHRIST,
A Professional Corporation

André M. Szuwalski
Reg. No.: 35,701

Date: 3/22/04

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APPENDIX A

CLAIMS PENDING ON APPEAL

1. A method for determining oil content of a seed comprising the steps of:

extracting oil from a seed using a solvent;

evaporating said solvent in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light; and,

determining said oil content based on said reflected light.

2. The method of claim 1, wherein said seed has a mass of less than 100 micrograms.

3. The method of claim 1, wherein said seed has a mass of less than about 50 micrograms.

4. The method of claim 1, wherein said seed has a mass of less than about 25 micrograms.

5. The method of claim 1, wherein said solvent comprises an organic solvent.

6. The method of claim 1, wherein said solvent comprises a nonpolar solvent.

7. The method of claim 1, wherein said solvent is selected from the group consisting of hexane, petroleum ether, alcohol, decane, and acetonitrile.

8. The method of claim 1, wherein 0.5 to 50 mL of said solvent is used.

9. The method of claim 1, wherein 1 to 3 mL of said solvent is used.

10. The method of claim 1, wherein said step of evaporating is performed in an evaporative light scattering detector.

11. The method of claim 1, wherein said stream of gas comprises nitrogen.

12. The method of claim 1, further including the step of introducing said solvent into said stream of gas at a rate between 0.3 and 5 milliliters per minute.

13. The method of claim 1, wherein said light is laser light.

14. The method of claim 1, wherein said step of detecting said reflected light is performed with a silicon photodiode.

15. The method of claim 1, further including the step of heating said stream of gas.

16. The method of claim 1, further comprising the step of separating said seed from said solvent after said step of extracting.

17. The method of claim 16, wherein said step of separating is performed by centrifugation.

18. The method of claim 1, further comprising the step of introducing said solvent into a second solvent prior to said step of evaporating.

19. The method of claim 1, wherein said method is performed in less than 6.5 minutes.

20. The method of claim 1, wherein said method is performed in less than 1.5 minutes.

21. The method of claim 1, wherein said seed is maize.

22. The method of claim 1, wherein said seed is soybean.

23. The method of claim 1, wherein said seed is rapeseed.

24. A method for determining oil content of a sample comprising the steps of:

extracting oil from a sample using a solvent;

separating said solvent from said sample;

evaporating said solvent in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light; and,

determining said oil content based on said reflected light.

25. The method of claim 24, further comprising the step of introducing said solvent into a second solvent prior to said step of evaporating.

26. The method of claim 24, wherein said step of separating is performed by centrifugation.

27. A method for determining oil content of an agricultural product comprising the steps of:

disrupting said agricultural product to produce ground product;

extracting oil from said ground product using a solvent;

evaporating said solvent in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light;

determining said oil content based on said reflected light.

28. The method of claim 27, further comprising the step of introducing said solvent into a second solvent prior to said step of evaporating.

29. The method of claim 27, wherein said step of disrupting comprises the step of grinding.

30. A method for determining oil amount within a solvent/oil mixture, comprising the steps of:

evaporating said solvent/oil mixture in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light; and,

determining said oil amount based on said reflected light.

31. A method for determining oil amount within a solvent/oil mixture, comprising the steps of:

introducing said solvent/oil mixture into a solvent carrier to form a processing solvent;

evaporating said processing solvent in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light; and,

determining said oil amount based on said reflected light.

32. A method for selecting a seed having an enhanced oil content, comprising the steps of:

extracting oil from a seed using a solvent;

evaporating said solvent in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming

reflected light from the oil particles;

detecting said reflected light;

determining oil content of the seed based on said reflected light; and,

selecting a seed with a similar genetic background to said seed based on said determined oil content.

33. A method according to claim 32, further comprising the step of germinating said selected seed with a similar genetic background.

34. A method according to claim 32, further comprising the step of placing in a container said selected seed.

35. A method of introgressing a trait into a plant comprising the steps of:

extracting oil from a seed using a solvent;

evaporating said solvent in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light;

determining said oil content based on said reflected light;

selecting a seed with a similar genetic background to said seed based on said determined oil content;

growing a fertile plant from said selected seed; and,

utilizing said fertile plant as either a female parent or a male parent in a cross with a second plant.

36. A method according to claim 35, further comprising selecting a progeny of said cross having determined oil content.

37. A method according to claim 35, wherein said fertile plant is said male parent said cross.

38. A method according to claim 35, wherein said fertile plant is said female parent to said cross.

39. A method according to claim 35, wherein said plant is selected from the group consisting of alfalfa, apple, banana, barley, bean, broccoli, castorbean, citrus, clover, coconut, coffee, maize, cotton, cucumber, Douglas fir, Eucalyptus, Loblolly pine, linseed, melon, oat,

olive, palm, pea, peanut, pepper, poplar, Radiata pine, rapeseed, rice, rye, sorghum, Southern pine, soybean, strawberry, sugarbeet, sugarcane, sunflower, sweetgum, tea, tobacco, tomato, turf, and wheat.

40. A method according to claim 35, wherein said plant is selected from the group consisting of cotton, maize, soybean, rapeseed, rice, and wheat.

41. A method according to claim 35, wherein said plant is maize.

42. A method according to claim 35, wherein said plant is soybean.

43. A method according to claim 35, wherein said plant is rapeseed.

44. A method for determining oil content of a seed comprising the steps of:

extracting oil from a seed using a solvent;

nebulizing said solvent containing said extracted oil under high pressure into a device capable of evaporating said solvent;

evaporating said solvent in a stream of gas in said device to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light;

determining said oil content based on said reflected light.

45. A method for selecting a seed having an enhanced oil content, comprising the steps of:

a) extracting oil from a seed using a solvent;

b) evaporating said solvent in a stream of gas to form oil particles;

c) directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

d) detecting said reflected light;

e) determining said oil content based on said reflected light;

f) repeating steps a) through e) one or more times, and,

g) selecting one or more seeds based on said oil content.

46. A device, comprising:

a nebulizer that mixes a stream of gas with a mixture comprising a solvent and oil to create a dispersed spray;

a drift tube that receives the dispersed spray and within which the solvent evaporates leaving dispersed particles of the oil flowing in the stream of gas;

a source of emitted light that is directed into the drift tube and reflects off the flowing dispersed particles of oil;

a light detector operable to produce an output signal proportional to the amount of light reflected off the flowing dispersed particles of oil; and

a signal processing functionality which determines an amount of oil present within the mixture from the output signal.

47. The device of claim 46 wherein the oil is extracted from at least one seed using the solvent.

48. The device of claim 46 further including a chromatograph connected to receive the output signal and produce a visual quantity indication of the flowing dispersed particles of oil.

49. The device of claim 46 wherein the source of light produces light capable of reflection off particles of oil.

50. The device of claim 49 wherein the produced light is laser light.

51. The device of claim 46 wherein the light detector comprises a photodetector.

52. The device of claim 46 wherein the solvent is selected from the group consisting of hexane, decane, petroleum ether, an alcohol, isopropanol and acetonitrile.

53. The device of claim 46 wherein the mixture comprises a supernatant.

54. The device of claim 46 wherein the stream of gas comprises a gas selected from the group consisting of an inert gas and a noble gas.

55. The device of claim 46 wherein the solvent comprises a first solvent and a second solvent.

56. The device of claim 55 wherein the first solvent is used to extract the oil from at least one seed.

57. The device of claim 56 wherein the first solvent is selected from the group consisting of hexane, decane, petroleum ether, an alcohol, isopropanol and acetonitrile, and the second solvent is selected from the group consisting of isopropanol, hexane, and mixtures thereof.

58. A device, comprising:

an input source of a mixture comprising a solvent and an unknown amount of oil; and

an evaporative light scattering detection system that (a) receives the mixture from the input source, (b) forms the received mixture into a dispersed spray from which the solvent evaporates leaving dispersed particles of flowing oil that scatter light, (c) detects the scattered light; and (d) processes the detected scattered light to determine the unknown amount of oil which is present in the mixture.

59. The device of claim 58 wherein the evaporative light scattering detection system comprises:

a high-performance liquid chromatography (HPLC) device that evaporates the solvent from the mixture leaving the dispersed particles of flowing oil;

a source of emitted light that is reflected off the dispersed particles of flowing oil; and

a light detector operable to produce an output signal responsive to detection of reflected light that indicates the presence of oil.

60. The device of claim 59 wherein the output signal is proportional to the amount of reflected light, the output signal being indicative of an amount of oil present within the mixture.

61. The device of claim 59 wherein the high-performance liquid chromatography (HPLC) device comprises:

a nebulizer that mixes a stream of gas with the mixture to create a dispersed spray; and

a drift tube that receives the dispersed spray and within which the solvent evaporates leaving dispersed particles of the oil flowing in the stream of gas.

62. The device of claim 61 wherein the mixture comprises a supernatant.

63. The device of claim 59 further including a chromatograph connected to receive the output signal and produce a visual quantity indication of the dispersed particles of flowing oil.

64. The device of claim 59 wherein the source of light produces light capable of reflection off particles of oil.

65. The device of claim 64 wherein the produced light is laser light.

66. The device of claim 58 further including means for detecting an amount of scattered light, the detected amount of scattered light being indicative of an amount of oil present within the mixture.

67. The device of claim 58 wherein the solvent comprises a first solvent and a second solvent.

68. The device of claim 67 wherein the first solvent is used to extract the oil into the mixture from at least one seed.

69. The device of claim 67 wherein the first solvent is selected from the group consisting of hexane, decane, petroleum ether, an alcohol, isopropanol, and acetonitrile, and the second solvent is selected from the group consisting of isopropanol, hexane, and mixtures thereof.

70. A device, comprising:

a first input source of a mixture comprising a first solvent and an unknown quantity of oil;

a second input source of a second solvent including means for introducing the mixture into the second solvent;

a third input source of a stream of gas;

a nebulizer that mixes the stream of gas with the second solvent to create a dispersed spray containing first solvent droplets, second solvent droplets and included oil;

a drift tube that receives the dispersed spray and within which the first and second solvent droplets evaporate leaving drifting dispersed particles of the oil;

a source of emitted light that is directed into the drift tube and reflects off the drifting dispersed particles of oil;

a light detector operable to produce an output signal responsive to detection of reflected light; and

a signal processing functionality which processes the output signal to make a determination of the unknown amount of oil which is present in the mixture.

71. The device of claim 70 wherein the nebulizer and drift tube form a high-performance liquid chromatography (HPLC) device that evaporates the first and second solvents and releases the dispersed particles of oil from the mixture.

72. The device of claim 70 wherein the output signal is proportional to the amount of reflected light, the output signal being indicative of an amount of oil present within the mixture.

73. The device of claim 72 wherein the oil is extracted from the at least one seed using the first solvent.

74. The device of claim 72 further including a chromatograph connected to receive the output signal and produce a visual quantity indication of the dispersed particles of oil.

75. The device of claim 70 wherein the source of light produces light capable of reflection off particles of oil.

76. The device of claim 75 wherein the produced light is laser light.

77. The device of claim 70 wherein the light detector comprises a photodetector.

78. The device of claim 70 wherein the first solvent is selected from the group consisting of hexane, decane, petroleum ether, an alcohol, isopropanol, and acetonitrile, and the second solvent is selected from the group consisting of isopropanol, hexane, and mixtures thereof.

79. The device of claim 70 wherein the mixture comprises a supernatant.

80. The device of claim 70 wherein the stream of gas comprises a gas selected from the group consisting of an inert gas and a noble gas.

81. The method of claim 24 wherein the sample is selected from the group consisting of a seed, an agricultural product and a plant tissue.